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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|-----------------|-------------|----------------------|---------------------|
| 08/697,953      | 07/24/97    | KIRA                 | PT 959107A          |

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EXAMINER

GRAYBILL, D

ART UNIT PAPER NUMBER

1307

DATE MAILED: 12/16/97

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

|                              |                                      |                                    |
|------------------------------|--------------------------------------|------------------------------------|
| <b>Office Action Summary</b> | Application No.<br><b>08/897,953</b> | Applicant(s)<br><b>Kira et al.</b> |
|                              | Examiner<br><b>David E. Graybill</b> | Group Art Unit<br><b>1107</b>      |



Responsive to communication(s) filed on 24 Jul 1997

This action is **FINAL**.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

#### Disposition of Claims

Claim(s) 1-10 is/are pending in the application.

Of the above, claim(s) 9 and 10 is/are withdrawn from consideration.

Claim(s) \_\_\_\_\_ is/are allowed.

Claim(s) 1-8 is/are rejected.

Claim(s) \_\_\_\_\_ is/are objected to.

Claims 1-10 are subject to restriction or election requirement.

#### Application Papers

See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

The drawing(s) filed on 24 Feb 1995 is/are objected to by the Examiner.

The proposed drawing correction, filed on \_\_\_\_\_ is  approved  disapproved.

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. § 119

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

All  Some\*  None of the CERTIFIED copies of the priority documents have been

received.

received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

#### Attachment(s)

- Notice of References Cited, PTO-892
- Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_
- Interview Summary, PTO-413
- Notice of Draftsperson's Patent Drawing Review, PTO-948
- Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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Restriction to one of the following inventions is required under 35 U.S.C. 121:

Group I, claims 1-8, drawn to a process, classified in class 438, subclass 183.

Group II, claims 9 and 10, drawn to an apparatus, classified in class 29, subclass 25.01.

The inventions are distinct, each from the other, because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (M.P.E.P. § 806.05(e)). In this case, the apparatus as claimed can be used to practice another and materially different process such as a non-semiconductor chip fabrication process.

Prosecution is being continued on group I, claims 1-8, the invention elected and prosecuted by applicant in the parent application.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the claim 1, limitations, "heating . . . and, concurrently aligning," and, "wherein the second pressure . . . chips," and the claim 2 limitations must be shown or the features cancelled from the claims. No new matter should be entered.

35 U.S.C. § 132 states that no amendment shall introduce new matter into the disclosure of the invention. The amendment filed 8-16-96 is objected to under 35 U.S.C. § 132 because it introduces new matter into the specification.

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Specifically, the amendment to page 11, line 14, is amendatory material which is not supported by the original disclosure. Applicant is required to cancel the new matter in the response to this office action.

Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not originally described in the specification in such a way as to reasonably convey to one skilled in the relevant art that applicant, at the time the application was filed, had possession of the claimed invention. Specifically, in claim 1 the phrase "heating . . . and, **concurrently** [emphasis added], aligning" was not originally sufficiently described.

Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim, or amend the claim to place the claim in proper dependent form, or rewrite the claim in independent form.

The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the

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art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103.

Claims 1-8 are rejected under 35 U.S.C. § 103 as being unpatentable over the combination of applicant's admitted prior art, Maeda '486, Fujimoto and DiStefano.

Applicant teaches as conventional a process comprising the steps of forming leveled projection electrode studs 14 on a semiconductor chip 11 by wire-bonding; forming conductive adhesive 16a on the studs by a conductive adhesive 16 that has been skidded on a plate 15a and then transcribed onto the studs; applying a thermosetting insulating adhesive 18 to mounting parts of a substrate 17; aligning the chip to the mounting parts; heating the substrate; and performing a fixing of the semiconductor with a final pressure and a thermosetting temperature of the adhesive; page 1, line 23 to page 2, line 22.

However, applicant does not appear to explicitly teach as conventional a process comprising the steps of heating the adhesive on the substrate with a half-thermosetting

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temperature, and performing a first fixing of plural chips with a first pressure. Nonetheless, Maeda teaches this process at column 1, lines 7-13 and 46-59; column 3, lines 48-67; column 4, lines 13-55; and column 5, lines 19-47. Moreover, it would have been obvious to combine the process of Maeda with the process of applicant's admitted prior art because it would enable accurate alignment of plural chips before the final pressing and fixing step of the conventional art.

Although, as cited, the combination of applicant's admitted prior art and Maeda teaches a process comprising plural chips, the combination does not appear to explicitly teach a process wherein a second fixing is simultaneously performed for each of the chips with a second pressure higher than the first pressure. Nevertheless, Fujimoto teaches this process at column 5, lines 13-63. Moreover, it would have been obvious to combine the process of Fujimoto with the process of the combination of applicant's admitted prior art and Maeda because it would reduce manufacturing time. In any case, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose a higher second pressure because applicant has not disclosed that this limitation is for a particular unobvious purpose, produces an unexpected result, or is otherwise critical, and it appears *prima facie* that the process would possess utility using another pressure.

In addition, although the combination of applied prior art teaches a process comprising the steps of heating with a half-thermosetting temperature, aligning, and first fixing the chips, the applied prior art does not explicitly teach a process comprising heating with a half-thermosetting temperature, and **concurrently** aligning the chips, and first fixing the chips. Yet, DiStefano

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teaches this process at column 9, line 3 to column 10, line 2. Moreover, it would have been obvious to combine the process of DiStefano with the process of the combination of applicant's admitted prior art, Maeda and Fujimoto because it would reduce adhesive void formation.

Applicant's amendment and remarks filed 5-30-97 are addressed in the rejection supra and are further addressed infra.

Applicant quotes the rejection and replaces the "s" in the term "applicant's" with "[s]". Apparently, this insertion is intended to correct a perceived grammatical error. However, it is respectfully submitted that there is no grammatical error because the term "applicant," as used herein, is intended to conform to the expedient set forth in MPEP 605(b):

Unless the contrary is indicated the word "applicant" when used in these sections refers to the inventor or joint inventors who are applying for a patent.

Also, applicant argues that, "it is not necessary in the applicants' claimed invention to precisely adjust viscosity of the adhesive." This argument is respectfully deemed to be unpersuasive because the prior art is not relied on for this teaching. Moreover, the instant invention is not limited to a process comprising wherein it is not necessary to precisely adjust viscosity of the adhesive.

Applicant also contends that in the process of Fujimoto, "there would be insufficient liquidity for the adhesive to pass through very short intervals between the large number of chips or terminals." This contention is respectfully deemed to be unpersuasive because Fujimoto is not relied on in the rejection for this teaching. Furthermore, it has been held that the test for

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obviousness is not whether the features of one reference may be bodily incorporated into another to produce the claimed subject matter but simply what the combination of references makes obvious to one of ordinary skill in the pertinent art. In re Van Beckum 169 USPQ 47 (CCPA 1971); In re Bozek 163 USPQ 545 (CCPA 1969); In re Sneed 218 USPQ 385 (CCPA 1983).

In addition, applicant alleges, “no such two types of fixing are taught in Maeda.” Again, this allegation is respectfully deemed to be unpersuasive because Maeda is not relied on in the rejection for this teaching.

Further, applicant appears to argue that the motivation to combine the references is not found in the references. To this end, it is recognized that references cannot be arbitrarily combined and that there must be some logical reason why one skilled in the art would be motivated to make the proposed combination of references. In re Regel 188 USPQ 136 (CCPA 1975). However, there is no requirement that the motivation to make the combination be expressly articulated in one or more of the references - the teaching, suggestion or inference can be found not only in the references but also from knowledge generally available to one of ordinary skill in the art. Ashland Oil v. Delta Resins 227 USPQ 657 (CAFC 1985). The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. In re McLaughlin 170 USPQ 209 (CCPA 1971); In re Rosselet 146 USPQ 183 (CCPA 196). References are evaluated by what they collectively suggest to one versed in the art, rather than by their specific disclosures. In re Simon, 174 USPQ 114 (CCPA

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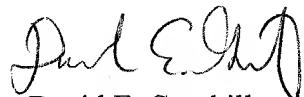
1972); In re Richman 165 USPQ 509, 514 (CCPA 1970). In the instant rejection, proper motivation to combine is provided.

**Any telephone inquiry of a general nature or relating to the status (MPEP 203.08) of this application or proceeding should be directed to the group receptionist at (703) 308-0661.**

Any telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (703) 308-2947. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, supervisory primary examiner, John Niebling, can be reached at (703) 308-3325.

The fax phone number for group 1100 is (703) 305-3599.



David E. Graybill  
Primary Examiner  
Art Unit 1107

D.G.